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OFFICE OF THE

# Auditor General of British Columbia

# Infection Control: Essential for a Healthy British Columbia:

## *Northern Health Authority*

March 2007

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# Detailed Report

# Background

Infection prevention, surveillance and control programs aim mainly at protecting patients, health care workers and visitors from contracting an illness while in the health care environment. Public Health programs have a similar goal: that of preventing the spread of communicable diseases in the population at large. Data on communicable diseases is available but data on the impact of hospital-acquired infections in British Columbia is very limited, although some health authorities have made attempts to examine the costs of specific organisms. However, studies highlight the enormity of the issue of hospital-acquired (nosocomial) infections (see below).

**The Numbers on Health Care Acquired Infection**

In New Zealand in 2003, it was estimated that about 10% of patients admitted to hospital will acquire an infection as a result of their hospital stay. A study released by the British National Health Service in the same year found that 9% of the population acquired an infection during a hospital stay and estimated that the cost per patient increased three-fold when the individual contracted a hospital-associated infection.

In the United States, it is estimated that nearly 2 million patients a year get an infection in a health care facility and, of those, about 90,000 die as a result of the infection. More than 70% of the bacteria that cause hospital-acquired infections are resistant to at least one of the drugs most commonly used to treat them. It is estimated that treating hospital-acquired infections accounts for 2% of total hospital costs.

A Canadian survey (reported in 2000) of hospitals with greater than 80 beds found that only 13% of hospitals adequately monitor hospital infections and only 1 in 5 institutions had the staff and procedures necessary to keep infections controlled. The lead author of that report also prepared data for the Romanow Commission. That information indicated that Canadians contract more than 200,000 hospital-acquired infections annually, resulting in 8,500 – 12,000 deaths per year. The direct costs of hospital-acquired infections were estimated to be around $1 billion annually.

While infection prevention, surveillance and control programs have been part of British Columbia health care facilities for a long time, the capacity of such programs has always varied from one facility to another. These differences in capacity and resources were carried into the 2001 reorganization of the British Columbia health care system. At that time, the system was organized into the Provincial Health Services Authority and five geographically defined health authorities: Interior Health, Fraser Health, Northern Health, Vancouver Coastal Health and Vancouver Island Health. Each of the latter five is responsible and accountable for care delivery across the continuum of care (residential care, acute care, mental health, public health and home and community care).

## Background

The Provincial Health Services Authority is responsible for specialized provincial health services such as cardiac surgery, which is delivered in a number of locations within the regional health authorities. As well, the provincial authority operates the following provincial agencies:

- British Columbia Centre for Disease Control
- British Columbia Cancer Agency
- British Columbia Provincial Renal Agency
- British Columbia Transplant Society
- British Columbia Children's Hospital and Sunny Hill Health Centre for Children
- British Columbia Women's Hospital and Health Centre
- Riverview Hospital
- Forensic Psychiatric Services Commission

In the first few years of this realignment, infection control in the health authorities operated as separate programs within facilities or a cluster of facilities, much as they had done before. At the same time, Public Health continued to operate within the Health Act and its regulations for communicable disease control. Not surprisingly, both these factors make it difficult to bring an integrated approach to infection control management across the continuum of care.

## Audit Purpose and Scope

The purpose of our audit was to assess whether the health authorities have effective systems for the prevention, surveillance and control of infections across all service delivery responsibilities.

We focused on the Ministry of Health, the Provincial Health Services Authority and the five geographically defined health authorities. Specifically, we wanted to find out whether the Ministry of Health and the Provincial Health Services Authority provide a framework for infection prevention, surveillance and control (see the Provincial Overview); and whether each of the health authorities:

- has a workable plan in place for prevention, surveillance and control of infections;
- is demonstrating best practices for infection prevention, surveillance and control;

- has information system support in place for infection prevention, surveillance and control; and
- is reporting on the status of its infection prevention, surveillance and control efforts and is making continuous improvements.

We did not examine the infection prevention, surveillance and control practices in the B.C. Ambulance Service, physicians' offices or facilities not funded by the health authorities.

We carried out our audit fieldwork from July 2005 to February 2006.

We performed the audit in accordance with assurance standards recommended by the Canadian Institute of Chartered Accountants and accordingly included such tests and other procedures as we considered necessary to obtain sufficient evidence to support our conclusions. In gathering our evidence, we reviewed documents prepared by the health authorities, the Ministry of Health and other agencies and organizations. We also interviewed board members, senior management, managers and physicians in the health authorities, as well as staff within the Ministry of Health.

## Northern Health Authority

The Northern Health Authority (Northern Health) is responsible for the delivery of acute and residential care, as well as mental health, home and community care and Public Health across northern British Columbia. The authority covers close to two-thirds of British Columbia's land area and is bordered by the Northwest and Yukon Territories to the north, the Interior to the south, Alberta to the east, and Alaska and the Pacific Ocean to the west. It serves approximately 300,000 people, 13% of whom are First Nations. The large area and scattered population pose challenges to service delivery because it is difficult to resource and attract specialized staff to work in small remote communities and facilities.

# Background

Northern Health is organized into three operational Health Service Delivery Areas (HSDAs): the Northeast, the Northern Interior, and the Northwest. This structure allows for greater local operation and health care decision-making.

Staff and physicians working for Northern Health number 7,000. This equates to about 4,000 full-time-equivalent (FTE) positions.

There are more than 24 acute care facilities, 14 long-term care facilities (with 900 residential care bed spaces), a number of Public Health units, and offices providing specialized services throughout the region. The corporate office for Northern Health is in Prince George.

The region had an operating budget of $482 million in 2005/2006, with Acute Care receiving $170.2 million, Home and Community Care receiving $68.9 million and community programs (including Public Health) receiving $69.9 million. The budget also manages other costs such as administration.

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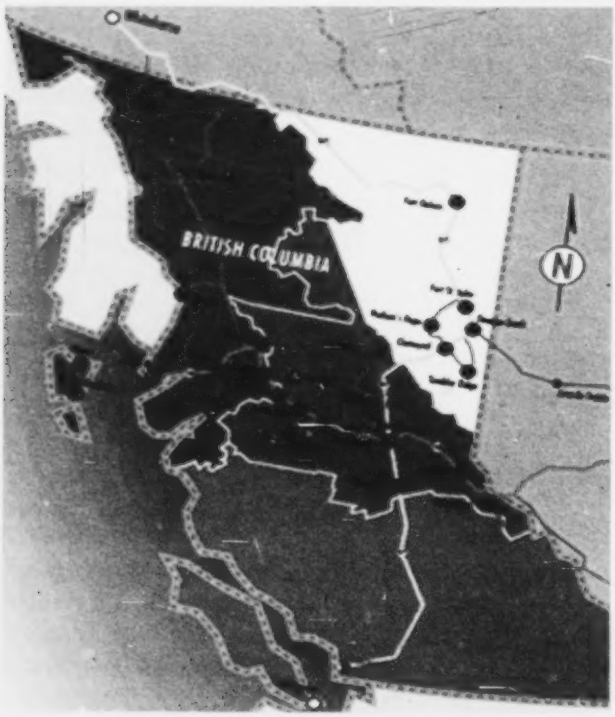


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# Background

## Overall Conclusion

The Northern Health Authority recognized the need to create structure, allocate resources and establish an information system for infection prevention, surveillance and control. However, the organization is very early in the process and there is no determined accountability structure, no plan and no outcome indicators other than those seen in its Performance Agreement with the Ministry of Health.

# Planning for infection prevention, surveillance and control is in the very early stages in the Northern Health Authority

The Northern Health Authority is responsible and accountable for care delivery across the continuum of care (residential care, acute care, mental health, public health and home and community care). We therefore expected to find that planning for infection prevention, surveillance and control had been integrated across the care continuum.

## Conclusion

Northern Health does not have a written plan for infection prevention, surveillance and control. However, some groundwork has been done to support creating a business plan.

## Findings

### Neither Northern Health's Strategic Plan 2004 – 2008 nor its Health Service Redesign Plan 2005 – 2008 include infection control

In the Northern Health Authority, neither its Strategic Plan 2004 – 2008 nor its Health Service Redesign Plan 2005 – 2008 (its business plan) directly addresses managing infections. However, the strategic plan does set the goals and objectives for direction of the health authority:

Goal 3 says "Integration — we will create a single health care organization to better meet individual needs through integrating services and resources." Should the goal with identified initiatives move ahead, we would expect to find staff working together in a program across all services and programs to manage infections.

Goal 2 says "High Quality Health Services: residents and visitors to northern British Columbia will have access to high quality health services in an appropriate setting." And Objective 12 says "improvement through evidence: Northern Health will use research findings and best practices to improve the quality and safety of services we deliver and measure these changes in ongoing work to improve our services." From this goal and objective, we expected to see something related to infection prevention, surveillance and control in the Health Services Redesign Plan.

## Planning for infection prevention, surveillance and control is in the very early stages in the Northern Health Authority

The Health Service Redesign Plan (also referred to as the business plan) is written to demonstrate the key initiatives and responses to identified service needs of the board. There are three key initiatives related to communicable disease management:

- collaborate with Ministry of Health in the development of the Public Health Act and Public Health core programs;
- create an authority-wide system of integrated services; and
- decrease the incidence of communicable disease in Northern Health.

Putting the two goals and the key initiatives together, we would expect that not only would communicable disease management be integrated across the North, but all services that Northern Health is accountable for would be included to manage infections. However, nowhere did we find an infection prevention, surveillance and control plan addressed for the authority.

Within each program, Northern Health expects a business plan to support resource allocation. The infection control program does not have a plan, but there is the opportunity to create and submit a business plan.

## A background paper and a survey in the Northern Health Authority identified gaps in its infection control program

A study to determine what is needed for the future of an infection control program was carried out in 2005. The status of infection prevention, surveillance and control was assessed and compared with what was actually needed across Northern Health. The resulting report addressed components across acute care and Public Health and will be used to create a plan for further expansion and development of an integrated infection control program. When complete, the plan will be written into the Northern Health Authority business plan.

A survey also completed in 2005 asked staff in the health authority to identify the needs for their practice to prevent or control infections, and to relate this to the program and facility where they work.

Together these two documents were used to determine the necessary components of the infection control program; committee structure, regional infection control manuals, medical support,

## Planning for infection prevention, surveillance and control is in the very early stages in the Northern Health Authority

Infection Control Practitioner numbers, education, communication, and a surveillance framework needed to measure communicable diseases, antibiotic-resistant organisms (AROs), post-surgical infections and ventilator-associated pneumonia.

Identified gaps and the challenges to fill the gaps include the need for: stability in infection control positions; goals and objectives for the health authority's infection prevention and control program that are reviewed yearly; infection control quality indicators in collaboration with services and programs that are monitored within the quality and safety framework; and a comprehensive reporting structure so that surveillance reports reach groups responsible for interventions.

We noted several recent changes that the authority has made. For example, the Infection Control Committee roles, duties and accountabilities were revised for Northern Health and for the HSDAs; the Manager, Infection Control, was appointed; new Infection Control Practitioners were hired; and the acute care's infection control manual for Northern Health was completed and implemented.

We also saw that the infection control program has created a vision and mission statement, and goals and objectives for 2005/2006; and also determined the resources needed to do the work with a timeline. One of the objectives pertaining to resource improvement states, "add full-time equivalents (FTEs) to service the regional infection control program." Staff recruitment had also occurred.

## Preventive Public Health has an operations plan

Preventive Public Health, one of the services located in communities across the Northern Health Authority, has a comprehensive operations plan for 2005–2008. The Environmental Health and Licensing program for the heath authority also has goals and objectives for 2006/2007.

Each of these documents is detailed and particular to its own programs, but they do not show how they integrate with other services or programs in NHA.

# Best practices in the Northern Health Authority are not well demonstrated

The Public Health Agency of Canada (formerly Health Canada) has issued a number of guidelines in the area of infection control, which are considered to be "best practice." In addition, there are guidelines from other agencies such as British Columbia Centre for Disease Control and the United States' Center for Disease Prevention and Control that also support and provide guidance of best practices.

We expected to see regional, accessible infection control manuals, appropriate committee structures with accountabilities, educated staff with access to ongoing and timely education, workspace conducive to infection management, regular practice monitoring, and research opportunities.

## Conclusion

Northern Health has identified some weaknesses in its ability to meet best practices in infection prevention, surveillance and control, and is taking initial steps to address the issues.

## Findings

### Northern Health has made considerable effort to standardize its infection control manuals

Infection control standards, policies and procedure manuals provide staff guidance in dealing with specific infections. We found that Northern Health had recently completed an acute care manual (with support from the Infection Control Consultant from the B.C. Centre for Disease Control, who used Vancouver Island Health Authority policies and Health Canada policies as guidelines). This manual was distributed across the north and is now on all sites in print and on the authority's intranet. However, not all staff have regular access to the intranet.

A recent follow-up survey since distribution and education about the new manual indicated that staff appreciated the education, know how to use the manual, and know where the manuals are available on site and on the intranet. When the manual needs to be updated, as it does when there are known or identified new best practices, the Regional Infection Control Manager is responsible for doing so and staff will be informed of the changes.

## Best practices in the Northern Health Authority are not well demonstrated

Residential Care has been working on its manual. We were informed that it was close to being ready for distribution. A draft of Continuing Care's manual was out to staff for input about practice relevant to their facilities. The manual will then be revised, distributed and made available in both print and on the intranet. Education sessions about the manual will be provided to staff.

Public Health's *Communicable Disease Control Manual* is available online from the B.C. Centre for Disease Control and a print copy is available in all Public Health offices. Updates or changes to the policies are sent out by the centre through its provincial distribution list and then it is up to each office to ensure those changes are communicated to staff. This manual is not available on Northern Health's intranet.

We heard that staff do use manuals, as well as accessing the Infection Control Practitioner when needed. However, physicians interviewed informed us that all physicians might not know about the new manual. Instead, they usually access information from nursing staff.

## Northern Health has not provided the infection control program with adequate resources to meet best practices

The 2005 study determined that more resources were needed. Enhancement of the infection control program, the study recommended, would allow for an appropriate committee structure, adequate staffing, more education, surveillance and communication.

The Vice-President, Medicine brought this information to the attention of the senior executive team as he felt that resources were needed from the authority budget to address the gaps. A lift in budget was given to the program for the addition of Infection Control Practitioner positions and the Regional Infection Control Manager. However, we found no business case or follow-up plan to bring the program more in line with the guidelines.

Regional accountabilities, committee structures and staffing positions for the Northern Health infection control program are needed to sustain the services. The status of the committees and the positions is summarized below.

# Best practices in the Northern Health Authority are not well demonstrated

## Infection Control Organization

The Infection Prevention and Control Program was established in 2003 with a Regional Manager whose plan for development of the program included:

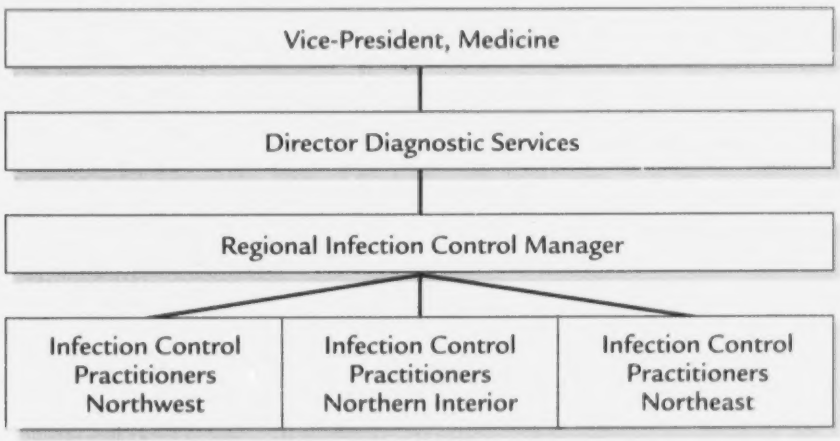
- an infrastructure that met provincial and national infection control guidelines and standards, by 2002–2004;
- a process for delivery of infection control service—education and communication, by 2004–2006;
- development of infection surveillance for Northern Health, by 2005–2006; and
- other development to meet future needs.

As a result, committee structuring began, positions were created and regional infection control manuals went into development.

During our fieldwork, the program structure was being re-determined. Reporting accountabilities for the infection control program were not finalized. An interim structure was in place during our audit that put the infection control program in the Diagnostics Services Program, accountable to the Vice-President, Medicine. Exhibit 1 shows the organizational structure of the infection control program.

Exhibit 1

Organizational Structure for Infection Control




Source: Northern Health Acute Care Infection, *Prevention and Control Policy and Procedure Manual*

## Best practices in the Northern Health Authority are not well demonstrated

The Director of Diagnostic Services and the Regional Infection Control Manager provide the leadership for the infection control program.

*Infection Control Committees*

A number of committees with terms of reference were either in place or being put in place. These include: Medical Advisory Committees (MAC), with accountabilities from the Northern Health Authority Medical Advisory Committee (NHA MAC); Infection Control Committees, the Senior Executive Committee; and the Board Performance Aboriginal and Quality Committee (PAQ).

Medical staff have a key role to play in infection control and the role is usually fulfilled through the medical staff organization and committee structure of the health authority. The Medical Staff Bylaws for NHA MAC determine the responsibility and accountability of the quality of medical care. The accountability rests with the Board of Directors.

MACs reporting to NHA MAC include the Medical Advisory Committee for each of Northeast, Northwest and Northern Interior HSDA. Two members from each HSDA MAC are members of NHA MAC. There are also standing committees reporting to NHA MAC. These include: NHA Infection Control, NHA Pharmacy and Therapeutics, and NHA Laboratory Services.

As well, the NHA MAC terms of reference allow for an additional MAC structure for each individual facility if that is the wish of the facility. We did not see minutes for such a committee in any facility.

The MAC for each of Northeast, Northwest, and Northern Interior delivery areas has standing committees reporting to it. These include: Infection Control, and Pharmacy and Therapeutics.

We heard that the Northern Health Regional Infection Control Committee was being created as a standing committee reporting to NHA MAC. The terms of reference and membership of the committee were being finalized following our fieldwork. However, we did see the July 2005 terms of reference and we were told that the Regional Infection Control Committee membership would be made up largely of staff and physicians from acute care facilities and Public Health (even though the stated mandate is within the hospital, as seen in Exhibit 2). The committee will be accountable for building governance, accountability and quality improvement

structures. As well, the committee will be setting standards and developing protocols across Northern Health, and monitoring communicable disease and infection rates. The committee will be accountable to the board's performance, Aboriginal and Quality Committee (PAQ).

The committee minutes include information on infection control staffing and pandemic influenza planning, but did not include any reports on infection rates. We were also quite surprised to see that attendance was low for this newly established committee.

Exhibit 2

Northern Health Regional Infection Control Committee Terms of Reference

| | |
|---|---|
| **Mandate:** | Make recommendations to the Northern Health Executive Management team, the Regional Medical Advisory Committee (RMAC) and the HSDA Medical Advisory Committee on the development, implementation and ongoing review of activities to prevent the acquisition and transmission of infections within the hospital |
| **Functions:** | • Approve the goals and objectives of the Infection Control service<br>• Act as an advocate for the prevention and control of infections in the facilities and to ensure that communication of data and policies throughout North Health<br>• Make recommendations regarding infection control policies and standards and to report to the Regional Medical Advisory committee for approval<br>• Ensure that facility procedures are in accordance with current provincial and Canadian infection control policies, procedures, and standards<br>• Review and make recommendations on reports prepared by the Infection Control service<br>• Act as resource to an Outbreak Management Team during an outbreak of infections or occurrence of endemic or epidemic infectious disease<br>• Ensure liaison with all Northern Health Infection Control committees and other regional committees including the Occupational Health Service<br>• Make recommendations on and assist in developing an appropriate Northern Health wide infection control surveillance program<br>• Make recommendations on and assist in developing an appropriate screening and surveillance program for antibiotic resistant organisms (especially MRSA, VRE, ESBL) |

## Best practices in the Northern Health Authority are not well demonstrated

| | |
|---|---|
| **Composition** | • Regional representatives:<br>  ○ Regional Infection Control Manager<br>  ○ Regional Director of Support Services<br>  ○ Regional Director of Quality and Risk Management<br>  ○ Medical Officer of Health or designate<br>• Northern Interior HSDA:<br>  ○ Quesnel representative<br>  ○ Rural nurse manager representative<br>  ○ Public Health Nurse representative<br>  ○ Workplace health and safety representative<br>  ○ PGRH<br>  ○ Client care manager<br>  ○ Health records representative<br>  ○ Pharmacy representative<br>  ○ Long term care head nurse<br>  ○ ICU nurse<br>• Physician Representatives (5)<br>  ○ Laboratory<br>  ○ Emergency<br>  ○ Medical-internal medicine<br>  ○ Surgical<br>  ○ Pediatrics<br>• Northwest HSDA representatives (2)<br>• Northeast HSDA representatives (2) |
| **Chairperson** | The chairperson's primary function is to:<br>• Chair the infection control meetings<br>• Provide guidance to the infection control practitioners and<br>• Liaise with the Regional and HSDA Medical Advisory Committees<br>The chairperson is appointed from the medical staff by the Regional Medical Advisory Committee<br>**Meeting Schedule** The committee meetings will occur not less than four (4) times a year. Additional meetings may be held at the call of the chair<br>**Minutes of Meetings** Minutes of all meetings should be taken, approved by the Committee and then posted to Northern Health staff web site. The administrative assistant assigned to infection control will take minutes of the meetings. Minutes will be distributed in a timely fashion<br>**Quorum** Fifty percent plus one of the current membership<br>**Voting** All committee members are voting members. Guests may attend from time to time to address particular concerns or to bring particular expertise to the committee |

Source: Northern Health Regional Infection Control Committee, July 2005

## Best practices in the Northern Health Authority are not well demonstrated

At the time of our fieldwork, a Medical Health Officer chaired the Northern Health Authority Infection Control Committee.

There are also HSDA Infection Control Committees in the Northwest and the Northeast, as well as in the Northern Interior (established during our audit). The Northern Interior Committee is being re-established with new members because people on the former committee became members of the Regional Infection Control Committee.

Terms of reference that include the mandate and functions for each of the HSDA Infection Control Committees are based on a framework similar to that for the regional committee. However, membership may differ based on the HSDA and available resources. For example, the Northeast HSDA has a North and a South committee remaining in place, while the other HSDAs each have one committee. These committees report to the Northern Health Authority Regional Infection Control Committee and the HSDA MAC.

Each HSDA also has a Leadership Committee and an Operational Committee. Infection control is a member of the Operational Committee only, while Workplace Health and Safety has representation on both committees.

Public Health has its own Communicable Disease Prevention and Control Team that is accountable to the Regional Director of Public Health Prevention, the Director of Public Health Protection, the Medical Health Officers and the Public Health Council. Regional strategies for prevention and control of communicable disease include health promotion, surveillance, investigation, follow-up and treatment. The team also discusses immunization strategies.

Following the national SARS outbreak, Northern Health developed a multidisciplinary and integrated Outbreak Management Team, led by the Incident Commander who is the Chief Medical Health Officer. We heard that this team became the model adopted by all health authorities to respond to infectious disease outbreaks with the potential for mass exposure or risk of high morbidity/mortality. The team meets when there is the potential (or the occurrence) of an outbreak.

## Best practices in the Northern Health Authority are not well demonstrated

*Infection Control Practitioners*

The number of certified Infection Control Practitioners required for a comprehensive program has not been firmly established, but the general guideline is 1 for every 150–175 acute care beds and 1 for every 150–250 residential care beds. There are no clear guidelines to indicate the number of practitioners required to support other programs such as community mental health and home care programs. However, it has been noted by a group of infection control experts that an Infection Control Practitioner's knowledge and expertise are needed in the community.

In 2003, the regional infection control program consisted of one Regional Manager and 1.5 full-time-equivalent (FTE) Infection Control Practitioners. The complement of Infection Control Practitioners in Northern Health during the time of our audit included actual and posted positions of: 1 Regional Infection Control Manager (who also takes time from her management role to be an Infection Control Practitioner) and 3.1 FTE Infection Control Practitioners (1 position for North Interior, 1 position for the Northeast, split between North and South Peace, and 1.1 positions for the Northwest, split between Prince Rupert and Terrace). The new positions were supported by the addition of $150,000 in March 2005 to fund salaries. Challenges in the North include its expansive geography, small facilities, and communities that do not have trained certified staff.

Northern Health has 544 acute care beds and 900 residential care spaces. Using the largest ratio of Infection Control Practitioners to beds, this means the authority needs an additional 6.7 FTEs above the number of Infection Control Practitioners now in place or being recruited. We heard concern that the benchmark ratios do not take into account the challenges of the recruitment, retention and the placing of Infection Control Practitioners in remote facilities in the North.

The Infection Control Practitioner is expected to cover the acute care facilities as well as the residential care facilities. We heard no mention of resources for mental health and addictions or home and community care programs, and at the ICP/bed ratio level of staffing, there is very little support available for these programs. Support is needed.

The practitioner's 2003 job description shows the minimum education qualification as professional registration, a Bachelor's degree, and the completion of a post-secondary infection control course or equivalent. Certification in infection control which is nationally recognized education in the profession is not requested. Not all hired are certified.

Public Health uses no set ratio of Public Health Nurses or Communicable Disease Nurses to the community population. In Prince George, there are both Public Health Nurses and Communicable Disease Nurses. In the remainder of Northern Health, the nurses working in Public Health are generalists and carry out both roles. With the increase in immunization vaccines, more time is taken at clinics than in the past, leaving less time for communicable disease follow-up. Therefore, we heard that perhaps more Communicable Disease Nurses are needed, but the exact number was not stated.

*Infection Control Officers*

There is no designated Infection Control Officer in Northern Health. The Vice-President, Medicine who is accountable for the infection control program, provides medical leadership. We found that Northern Health has no medical microbiologist or epidemiologist. There is no formal relationship with these specialties outside the authority. However, there is a casual relationship with medical microbiologists and epidemiologists in the Lower Mainland who are helpful when they are available. These professionals may be on staff at the B.C. Centre for Disease Control or at one of the other health authorities, for example Vancouver Coastal.

We heard from many interviewees that Northern Health medical leadership in infection control management is important, but not available. The health authority's work summary resource plan for infection prevention and control requires an infectious disease physician, or physician trained in infection control, to be actively involved in the program. We also saw that, in 2003, the HSDA Medical Advisory Committees were concerned that there was not an infection control physician in place. There was no one working in the position during our fieldwork, although we heard from physicians that recruitment was occurring.

## Best practices in the Northern Health Authority are not well demonstrated

Public Health is under the direction of the Chief Medical Health Officer who is a member of the senior executive team. There is also a Medical Health Officer in each HSDA who manages communicable disease.

We saw the memorandum of understanding between the Northern Health Authority and Aboriginal groups that gives the Medical Health Officer authority in outbreak management of communicable disease for Aboriginal people.

### *Workplace Health and Safety Staff*

The Workplace Health and Safety Department works closely with the infection control program and has responsibility for staff health. This involves ensuring that staff are up-to-date with their immunizations and that precautions are in place to protect staff from contracting any illnesses, and taking appropriate steps if staff become infected. The department has also been involved with fit-testing of N95 masks—masks that are the standard for infection protection from SARS.

### Physical Environment

There is evidence that the built environment may influence the incidence of infections in facilities. The built environment refers to the type of rooms, such as: single versus multi-patient (the ability to isolate patients); the location and number of sinks; types of surfaces; ability to separate clean and soiled equipment; and availability of waterless hand-washing stations.

A recent report on some acute care and residential care facilities and our own interviews highlighted the importance of many of these environmental factors (in affecting infection management). The facility review noted that facilities are improving as renovations occur. However, smaller older facilities may need redesign. Improvements are planned to occur over several years.

There are shortcomings in the location and number of hand washing stations, notably in the aging facilities. These shortcomings have been addressed with the installation of waterless hand wash gel throughout facilities, as well as with having the staff in facilities and in the community carry and use individual product.

## Best practices in the Northern Health Authority are not well demonstrated

Overall, Northern Health has insufficient isolation rooms, especially in outlying facilities. We heard that an audit occurred because of SARS, and now some facilities have a negative pressure room. This was accommodated with construction, as well as with portable pumps where construction could not be undertaken in the short term. On one site that we visited, the pump had not yet arrived, but was expected to come shortly. The Northwest HSDA had no functioning negative pressure rooms at the time of our fieldwork

The design of some facilities for separating clean and dirty utility areas is poor. This may be because of the age of the facilities (of the 44 hospital, residential care and diagnostic facilities, 24 were constructed before 1980), or because of increased demand for services in areas that are not built to accommodate the patients. We also found that storage space was very limited and cleaning in the storage space was difficult in older facilities or in facilities where renovation had been planned but had not occurred. We heard that on one site, green tape was used to determine what part of the room was clean and what was not. This is an example of where the chance of clean equipment becoming contaminated with infectious agents is greatly increased.

For sites undergoing construction, there was often no Infection Control Practitioner involvement. For example, in the Northwest HSDA, Workplace Health and Safety staff were represented on the Capital Planning Committees and on the Leadership team, but there was no Infection Control Practitioner on either.

We heard that in residential care facilities, the management of infections differs from that in acute care because residences are homes for people. That means there is the opportunity to isolate if there are single rooms—and if there isn't, then patients with the same infection are placed together in the same room.

### Laboratories

Two general pathologists lead laboratory services in Northern Health. They are located at Prince George Regional Hospital. There is not a medical microbiologist, epidemiologist, or an infectious disease specialist in the authority. Backup for these services is through an informal arrangement with facilities in the Lower Mainland and the B.C. Centre for Disease Control.

# Best practices in the Northern Health Authority are not well demonstrated

Laboratory reports are generated in the laboratories of facilities that have them, and we heard that staff and physicians feel that the reports are timely.

We were told that laboratories were recently restructured in the authority. Now there are centralized services located in Prince George that give support to smaller hospital laboratories. With cutbacks in staffing, there is no longer a technologist in each HSDA who is responsible for standards of practice. An example was given of a test being done inappropriately in a small facility with no consequences to the patient. However, the risk of a mistake with consequences was questioned by the interviewee when there is not a technologist to monitor practice.

Concern was expressed that the Northern Health laboratory batches and sends out specimens such as hepatitis A once a week to BCCDC for diagnosis. Batching is based on hospital practice. However, sending a specimen earlier facilitates earlier diagnosis, and early intervention to contain the disease.

Also expressed in the Northeast HSDA is that diagnosis for rapid response for influenza is not always timely because there is not courier service on the weekends for specimen transfer to Vancouver.

## Supplies

Adequate supplies to manage infection control are needed to protect the staff from patient infection and fragile patients from the staff.

The budget for supplies is the responsibility of each program —not of the infection control program. Interviewees told us there were adequate gowns, masks and gloves. Fit-testing of N95 masks (the special masks used to protect staff from airborne infections) was underway during the time of our audit, by various people such as ambulance attendants, Infection Control Practitioners and Workplace Health and Safety staff. The supply of these masks was deemed adequate by those interviewed.

Efforts were made to have physicians fit-tested during the staff sessions. A memo to physicians at Prince George Regional Hospital also informed them about where and when mask fit-testing would be done.

## Best practices in the Northern Health Authority are not well demonstrated

### Infection control education during orientation in Northern Health is inconsistent across the continuum of care

There is no standard orientation program that includes infection control for new employees in Northern Health. Some programs, such as acute care, home and community care, mental health, residential care and public health, may have orientation with an infection control component, but there is no standard approach.

For example, we were provided the orientation program and registration lists for staff taking part in sessions in the Northern Interior HSDA, but not for the other HSDAs. There is also more in-depth education for nurses, which seems only to have taken place in Prince George, involving staff working mostly in Prince George.

Public Health takes part in the provincial standardized orientation for immunization competency. New staff are observed and they work with a mentor in clinics and then write an open-book examination.

We found no orientation for new physicians on infection control, although medical students may receive some education on N95 mask fit-testing.

Housekeepers are Northern Health employees except in some residential care facilities, and recently all housekeepers had standardized orientation by a private environmental contractor. A component of the education was about infection control. The Infection Control Practitioners were in attendance to ensure information was accurate and that it reflected practice in the authority.

### Ongoing education

Ongoing education in Northern Health is provided as needed, but on an ad hoc basis. This was seen with education presentations for tuberculosis, SARS and routine precautions for infection management. In the Northern Interior HSDA, nurses' education was advertised, carried out and attendance kept. However, we heard that the ability to do ongoing education in all HSDAs is restricted because of limited resources, notably in Infection Control Practitioner time. The Manager of the program also does infection control practice and provides education.

## Best practices in the Northern Health Authority are not well demonstrated

With the recent release of acute care's infection control manual, there was some standardized education delivered by infection control program staff. All Northern Health staff was paid to attend. The evaluations of the education sessions indicated it was well received, and knowledge of the manual increased.

Public Health has annual or bi-annual in-service meetings where communicable disease is a large component of the education. There is also follow-up of the Public Health Nurse orientation at three to six months after the open-book exam, a second-level exam and an update every three years. This is a provincial education standard for Public Health Nurses.

There is no ongoing standardized infection control education for physicians, except via the Medical Health Officer Medical Newsletter that is distributed to all physicians. The newsletter is seen in the HSDA Leadership Committee minutes, where feedback is requested. Northern Health physicians have continuing medical education and infection control education can be requested. We heard that this did not occur very often, if at all. On some medical rounds, infection control may be a topic or not, depending on the cases being reviewed.

We saw some memos about infections such as MRSA and Clostridium difficile (C. difficile), but we do not know if these memos are distributed throughout the authority or are available only at Prince George Regional Hospital.

The health authority was just completing the recruitment of an Internal Medicine physician with an infectious diseases certificate, and the physicians interviewed felt that this person would support ongoing education in infection control.

## Education for Infection Control Practitioners is difficult to obtain

With the decision to hire more Infection Control Practitioners, the health authority was aware that not all new hires would be qualified Infection Control Practitioners and that education would therefore be needed. Although Northern Health did not budget for Infection Control Practitioner education, not all positions were filled; and so some money was available for education. However, when staff applied for courses, they discovered that external courses had no available space for them. Staff are thus being trained on the job. On-the-job training is positive and increases both knowledge and

hands-on experience, but we think it will be important for the health authority to ensure that staff are able to access external educational programs to give them a solid grounding in infection management. Access to ongoing education is equally important for new hires and current Infection Control Practitioners.

We heard that there is no ongoing education budget for Infection Control Practitioners and that obtaining funds for education has occurred through application to outside agencies.

## Monitoring of infection control practices is not consistent across Northern Health

In this audit, we looked at monitoring from two perspectives: surveillance—the ongoing, systematic collection, analysis and interpretation of data for use to improve health outcomes; and the direct observation or audit of practice (such as hand washing or gowning). In addition we looked at the mechanisms the authority has in place for monitoring any third-party contracts that have implications for infection control.

### Surveillance

Surveillance across the HSDAs and all of NHA varies with the availability, skill and knowledge of the infection control Practitioner. However, we did expect to see surveillance for antibiotic-resistant organisms (ARO) and surgical site infections across NHA, but this was variable.

One person interviewed told us "a good infection control program is 40-60% surveillance."

We saw standardized report forms for AROs that include methicillin-resistant staphylococcus aureus (MRSA) and vancomycin-resistant enterococcus (VRE), and nosocomial infections (hospital-acquired infections). For AROs, there is standardized screening across the health authority for patients returning from listed facilities. However, a report on AROs noted that not all screening forms were completed. Thus, when the Infection Control Practitioner did follow-up chart reviews, it was difficult to tell if patients had an infection.

## Best practices in the Northern Health Authority are not well demonstrated

Even though ARO surveillance is expected, it is done inconsistently at the HSDA level. We were unable to determine which hospitals were doing the review, and how Northern Health integrated surveillance reporting to know if there was an outbreak across the authority (or if an outbreak was on a certain site or in an HSDA). We did not see any integrated reporting on AROs.

Northern Health is participating in a national patient safety initiative "Safer Healthcare Now!" that is focused on six targeted interventions, each of which has an evidence base indicating that appropriate implementation and practice can lead to reduced mortality and morbidity. This initiative is patterned after the Institute of Healthcare Improvement's "100,000 Lives" campaign in the United States.

Of the six targeted interventions, three are connected to infection control: Prevention of Central Line-Associated Bloodstream Infection; Prevention of Surgical Site Infection (selected surgeries); and Prevention of Ventilator-Associated Pneumonia. For each of the interventions, there is a kit that outlines what are considered key components, or bundles, of care and what changes might be made to implement the care requirements: data to be collected; calculations to be completed, analyzed and reported. Involvement in the initiative also required that baseline data be collected on current infection rates in these areas so that the authority has some sense of where it is starting. Northern Health is determining if it has an adequate number of ventilator days to take part in the Prevention of Ventilator-Associated Pneumonia. Exhibit 3 is an example of the information provided for one of the components of care related to preventing surgical site infections.

Exhibit 3

Use of Prophylactic Antibiotics in Surgery

**Components of Care**

1. **Appropriate Use of Prophylactic Antibiotics**
   For the purposes of the 100,000 Lives Campaign, the antibiotic process measures are these:
   - Antibiotics within 1 hour before surgical incision
   - Prophylactic antibiotics consistent with national guidelines (e.g., CDC)
   - Discontinuation of prophylactic antibiotics within 24 hours after surgery

   *Due to the longer infusion time required for vancomycin, it is acceptable to start this antibiotic (e.g., when indicated because of the beta-lactam allergy or high prevalence of MRSA) within 2 hours prior to incision

2. **What changes can we make that will result in improvement?**
   Hundreds of hospital teams across the United States have developed and tested process and systems changes that allowed them to improve performance on the antibiotic use measures. Some of these changes are:
   - Use preprinted or computerized standing orders specifying antibiotic, timing, dose and discontinuation
   - Change operating room drug stocks to include only standard doses and standard drugs, reflecting national guidelines
   - Reassign dosing responsibilities to anesthesia or holding area nurse so that timeliness is improved
   - Use visible reminders/checklists/stickers
   - Involve pharmacy, infection control and infectious disease staff to ensure that appropriate timing, selection, and duration are maintained

Source: Safer Healthcare Now! Campaign How-to-guide, Prevent Surgical Site Infections (February 2006)

## Practice Monitoring

The Infection Control Practitioner job description in the infection control manual does not specifically address practice monitoring. However, to manage infection prevention and control, the manual states that the Infection Control Practitioner will "ensure [that] transmission-based precaution (includes isolation categories) policies and procedures are initiated promptly and followed appropriately;" and will "ensure that principles of asepsis are maintained." In order to do this, it is expected that practice monitoring will occur.

Hand washing is a standard of practice used to break the chain of infection. A poster in Northern Health states "80% of common infections are spread by hands." There was also an infection control contest consisting of 20 questions, 8 of which are about the need to wash ones hands.

## Best practices in the Northern Health Authority are not well demonstrated

The infection control program also has a logo it uses on memos and e-mails: "Infection prevention is in YOUR hands....Wash 'em!!!" The message is a reminder of effective practice.

The 2005 background paper (mentioned above) for the development of an infection control program does not mention practice monitoring. However, the draft goals and objectives in the infection control program include practice monitoring of hand washing.

We found no evidence of ongoing monitoring of practice such as hand washing or use of gloves in any acute care facility or any residential care facility. We heard that there might be ad hoc audits of practice when practice improvement is needed, such as were found in a residential care facility.

Public Health does audit immunization practice regularly. This is a provincial standard.

We heard that home and community care audits practice during orientation. Practice monitoring occurs in the field over a five day period. There is also ongoing review of practice at three and six months.

We did see monitoring of air exchange in two hospitals in the Northeast HSDA. Air exchange rates are important to ensure that infectious agents are removed regularly and replaced with clean air. When practice did not meet the Canadian Standards and code, recommendations were made. It is not clear that monitoring air exchange is an authority-wide practice.

Northern Health also monitors and follows up when there is a provincial or national alert about infection control issues. For example, after the SARS outbreak, questionnaires were completed by nurses, physicians and staff from central supply to determine what equipment is cleaned and how. The results showed that central supply staff did not receive education on cleaning new equipment from vendors. As a result, it was recommended that central supply staff join nursing staff at vendor presentations.

*Antibiotic Use*

We expected that antibiotic use would be monitored, as use of inappropriate antibiotics is harmful to patients, as well being very costly. Northern Health has taken part in active surveillance by

the Institute of Safe Medication Practices Canada. The audit has no measures directly related to antibiotic surveillance practice, although characteristic #7: "IV solutions, medication concentrations, doses, and administration times are standardized whenever possible" could include antibiotics. The health authority scored high on this characteristic.

Overall, we found inconsistent or no antibiotic surveillance in Northern Health. Pharmacy staff may do a review or not, depending on resources. We found at the Prince George Regional Hospital that Pharmacy sends out reports of resistant organisms for the emergency department. We did not find this practice elsewhere. Overall, physicians said that they felt comfortable accessing Pharmacy should they have questions about the use of appropriate antibiotics.

In 2004, there was a report reviewing caesarean section infection rates in the Fraser Health Authority. The report, known as the Cochrane Report, was released provincially and contained recommendations on clinical protocols, including timing of antibiotic use in caesarean sections. Given that this report touched on medical practice, we were surprised that no mention of it was made in the minutes of the HSDA MACs or the NHA MAC. Nevertheless, as a result of this report, the health authority undertook a review of its practice of antibiotic use during caesarean sections. The review was not complete at the time of our fieldwork.

Public Health Nurses participate in the "Do Bugs Need Drugs?" program, which is an initiative that started in Alberta and is directed at educating the public about antibiotic resistance and the appropriate use of antibiotics. The program promotes three key messages:

- Hand washing is the best way to stop the spread of infections.
- Not all bugs are created equal. Both bacteria and viruses cause respiratory tract infections. Antibiotics work against bacterial infections and not against viral infections such as colds and flu.
- Antibiotic resistance is a problem. Use antibiotics wisely to prevent bacteria from becoming resistant to antibiotics.

## Best practices in the Northern Health Authority are not well demonstrated

The health authority expects that the consumption of antibiotics will decrease, and it is aware that monitoring will need to occur to determine the outcome.

*External Monitoring*

Northern Health participates in accreditation through Canadian Council on Health Services Accreditation (CCHSA), a national, non-profit, non-government independent body that offers health organizations a voluntary, external review process to assess quality by developing national standards, assessing compliance with those standards and sharing the information from the reviews and decisions. The accreditation review process highlights both strengths and areas for improvement and includes recommendations.

The accreditation standards for the Northern Health integrated environment team include those specific to infection control. Northern Health participated in the accreditation process in September 2004, and received the recommendation in June 2005 that the organization "develop strategies to ensure that an acceptable level of infection control is in place at all sites." The recommendation continued: "These strategies should include staff education and training and the implementation of policies and procedures for all levels of service." This recommendation was included in the 2005 study as support for enhancing the infection control program.

The health authority also participates in the annual provincial housekeeping audit conducted by WesTech Systems FM, Inc. Even though it does not contract out housekeeping services, it used the WestTech provincial auditing tool and technology, and took part in the provincial audit. At the time of our fieldwork, Northern Health had just completed its first external housekeeping audit. All facilities audited are now being reviewed internally and externally using the same methodology. Reports are generated and reported publicly, and corrective action is expected. In this first audit, Northern Health had an overall score of 88.43%, with the benchmark being 85%. Therefore, overall the authority was above the expected performance level, but in the Northeast HSDA, it was noted that one site registered below the benchmark. Corrective action was taken to improve the results. The area was then to be re-audited. We did not find the audit results on the Northern Health Authority website.

## Best practices in the Northern Health Authority are not well demonstrated

### Northern Health does not lead its own research, but it is involved in research directed by others

Research provides the opportunity to learn more about the risk of infections and communicable diseases and about the practices needed to mitigate the risk. It also provides an opportunity to determine new best practice in the management of infections. Northern Health is taking part in research that is occurring for communicable disease directed by B.C. Centre for Disease Control.

Public Health Nurses in the health authority are also taking part in the national review of beliefs and attitudes of staff that may or may not encourage others to be immunized.

A Michael Smith Foundation grant was received by Public Health to look at knowledge utilization—the use of knowledge and research to make changes in practice delivery.

In the future, partnerships with the University of Northern British Columbia and the Michael Smith Foundation will support further research opportunities in northern British Columbia.

# Information system support for infection prevention, surveillance and control is very weak

A key requirement of a comprehensive infection control program is that it enable access to good data so that the authority can understand infection rates and be able to take action to address the rates and to report on the overall program. We expected Northern Health to have information systems in place to support the infection control program. We also expected to see definitions for data input standardized across the health authority so that all people would collect the same data for comparisons with others.

## Conclusion

The Northern Health Authority has no integrated information system to survey infections. Public Health has a system to support its programs.

## Findings

### Northern Health has a number of stand-alone information systems that are not connected

There is no regional information system for the Northern Health Authority for infection prevention, surveillance and control. The systems that were inherited in regionalization and are in place now include ADT, SYNAPSE, IRIS, WHITE, EDIS, MDS-HC, MDSV2.0, and a data-sharing system, the iPHIS (Public Health Information System). They each support specific programs. None of these link or interface, and not all support infection surveillance.

Only Public Health has a system that supports infection control monitoring and surveillance: iPHIS. Northern Health uses the system and inputs occurrence data on the regulated communicable diseases using a standardized input format and definitions. The system is hosted and operated by the Provincial Health Services Authority and the B.C. Centre for Disease Control.

The iPHIS application supports a number of Public Health programs, including immunization records and communicable disease case management and reporting. It links to B.C. Centre for Communicable Disease Control, which links with the Public

## Information system support for infection prevention, surveillance and control is very weak

Health Agency of Canada (PHAC) through the electronic system for reporting of communicable diseases nationally. Currently, iPHIS is being reviewed nationally to determine its future within the context of PHAC.

Workplace Health and Safety has the Workplace Health Indicator Tracking and Evaluation (WHITE) system in place, which tracks staff immunizations. The rate of immunizations can be followed by facility and by HSDA, which allows the authority to focus on its annual flu campaign.

### Northern Health has an information system/information technology plan

The Northern Health Authority has recognized its information system shortcomings. In its Information Management/Information Technology (IM/IT) Service Plan 2006–2012, one goal is to integrate information systems in the North. It is expected that by the end of 2008, all Northern Health acute sites and most community sites will be using Cerner core applications, with larger sites implementing Computerized Provider Order Entry (CPOE) with nursing documentation. The timelines are set to also integrate with provincial initiatives. Cerner does not have an infection control module and there is no mention of infection management in the plan

Many physicians are connected by computer to the Northern Health Authority and they are using some of the systems already in place. In acute care, most have access to the laboratory reports. Access for physicians will increase and change as the new systems are put in place based on the plan.

### Data collection and tracking for prevention, surveillance and control does not provide an overall picture of infections in Northern Health, except in communicable diseases

Data collection in acute care is done by hand. All Infection Control Practitioners use various systems to find the information for patients with infections. The information comes from: chart reviews or microbiology positive report printouts; and various forms filled in by staff to collect the data (two practitioners use Palm Pilots, as they learned in their epidemiology course, while others use paper forms). Then each practitioner collates the information on an Excel spreadsheet.

## Information system support for infection prevention, surveillance and control is very weak

Using the standardized paper report forms, collection of data of the incidence of AROs including MRSA rates and C. difficile has been done in one HSDA and it showed an increase in cases over three months in 2004. However, the MRSA numbers are for those patients who contracted the disease while in Prince George Regional Hospital (in the Northern Interior HSDA); and it is unknown if the C. difficile report is for all of the authority or only for the Northern Interior HSDA. We recognize that Prince George Regional Hospital is the largest hospital in the authority, but infections also occur in smaller facilities. Consolidated reports would give a picture of infections in the North.

We saw no reports for nosocomial infections in hospitals in Northern Health.

Public Health monitors communicable disease using iPHIS, collecting data sometimes at source of practice (e.g., immunizations) and sometimes not (e.g., communicable diseases, which are diagnosed through the laboratory or B.C. Centre for Disease Control). The data from iPHIS is collated across Northern Health to give a picture of communicable diseases.

Home and Community Care and Continuing Care have a minimum data set across all facilities and communities. All nurses have tablets for input. However, the data set does not have specific data collection for infections or the ability to collate infection incidence across NHA.

We heard that "no news was good news," as infections were unknown across Northern Health Authority. However, because patients move among programs and facilities for care in the North, and some are sent to the south of the province for health care services, we are concerned that infections in one community or program could easily spread to another. A memo sent to all nursing staff regarding VRE screening for patients coming from a large facility in the south of the province shows the need to know who is infected so that appropriate precautions are taken to stop the spread.

## Information system support for infection prevention, surveillance and control is very weak

### There is inconsistency in data definitions, indicators and how systems are used

For the Northern Health Authority to understand infection control issues across the organization, it needs to be certain that data being collected and used is defined, interpreted and collected consistently.

At the time of our fieldwork, data definitions were not standardized across the authority, except by stand-alone programs. For example, Home and Community Care, Residential Care, and Public Health each use standard collection tools with data definitions. However, it is not clear that the data definitions are the same across the three mentioned programs and therefore across the health authority.

As noted above, Home and Community Care and Residential Care have a minimum data set with data definitions. Data definitions for infections are not available, but wound types are (e.g., an acute wound may be a surgical wound, or a chronic wound may be a decubitus ulcer). An interviewee indicated that a diagnosis of three or more people constitutes an outbreak. It was not clear to us that this is consistent across the authority.

There are standardized definitions in iPHIS for Public Health. However, when the B.C. Centre for Disease Control was given the responsibility from the Ministry of Health to do quarterly roll-up reports from the health authority, it was determined that there were no standards for data input. When we were in the health authority doing the audit, standardization of data input provincially was being determined.

On one site, the power to run the iPHIS system was not reliable. As this is the only system that has immunization records, its non-availability because of power failure when another system is running is an issue. Immunization status of children, for example, will not be known. We heard that this might lead to families with children needing to reschedule their appointment or to children not receiving immunization at the appropriate time.

The Aboriginal population does not have access to iPHIS, and therefore reporting is inconsistent on immunizations and communicable diseases. The nurses immunizing Aboriginal people must call the Public Health Nurse in the health authority to have the information on immunizations input into the iPHIS

system. We were not sure that this was being done consistently, and therefore immunization status of children will not be known. This could result in Aboriginal children being immunized once, twice or not at all.

In the Performance Agreement between the Ministry of Health and the Northern Health Authority, immunization levels for two-year-old children are collected using standardized data definitions. This is a standardized performance indicator. However, interpretation of the definition came into question when Northern Health did not meet the benchmark. The definition in the authority's 2005–2006 Performance Ag.eement scorecard is: "2 year olds with completed services of immunization (up to date for age)." This data definition changed to: "2 year olds with completed series of immunization (minus the booster)." We think there is considerable difference between the two definitions. Both types of data are now being collected in the Northern Health Authority.

In Acute Care, one HSDA collected and compared data with American data because their facility collected data the same way as the United States did. We did not find this collection method in other HSDAs. Overall, we concluded that acute care data definitions are not standardized, except those for C. difficile and MRSA, where most data collection occurs in Prince George for its facility.

# Reporting on the prevention, surveillance and control of infections across the health authority is very weak

We expected to see regular reporting by the infection control program to the Health Authority Medical Advisory Committee, the senior executive team and the Board of Directors, and that these groups would discuss the reports and initiate action or follow-up as appropriate.

We also expected reports to be distributed to the appropriate committees across the region and across all programs for quality improvement opportunities.

## Conclusion

Overall reporting by Northern Health on its prevention, surveillance and control program is minimal at all levels of the organization except by Public Health.

## Findings

### Infection control reports are used to support and improve infection control practices by site, but are not necessarily shared across Northern Health

When surveillance and incident reports are produced and improvements or changes in the management of infections are needed, Northern Health does this. However, what is learned at one site is not necessarily shared with another.

In May 2004, there was a meeting to discuss the issues surrounding the surveillance that showed an increase in C. difficile in Prince George Regional Hospital (PGRH). The meeting reviewed the number of cases, where the infection transfer may have occurred (community or in hospital) and there was a follow up process to determine what actions were needed to control the infection. Nine action items were recommended. They addressed such issues as education, care plans, commode cleaning, separation between clean and dirty items, prompt testing of patients, hand hygiene, enhanced cleaning of rooms, and antibiotic utilization.

In August 2004, a memo was sent to the hospital management team, the PGRH physicians and to the Medical Advisory Committee. It states that as a result of implementing the action items, the C. difficile rate at PGRH has dropped.

## Reporting on the prevention, surveillance and control of infections across the health authority is very weak

Nowhere did we see that the C. difficile practice changes and results were shared across Northern Health so that all facilities would learn from PGRH and implement the practices. We think that the lessons learned from the review would be beneficial to all of Northern Health.

### Reports to the board and Performance Aboriginal and Quality Committee are regular for the performance agreement indicators, but there is no other infection prevention, surveillance and control reporting in Northern Health

The Chief Executive Officer's report to the board brings high-level information. For example, the June 2005 accreditation recommendation from CCHSA was for: "development of a formalized measurement and reporting structure for quality improvement across the organization. A formal region-wide indicator structure is important." The recommendation includes: "strengthening Northern Health activities with respect to infection control practices and training and also in the area of exercising disaster plans."

An agenda item on the Board of Directors development meeting in September 2005 was a presentation on infection disease control. This item was a follow-up from the executive team meeting action items June 22, 2005. Two members were to lead the presentation of Infectious Disease/Blood Borne Pathogen infections issues (notably, within a facility). A short report was to follow from each HSDA, outlining who is responsible for infection control, the internal process and challenges. Our fieldwork was completed before the September meeting date, so we do not know if the presentation was made.

The Performance Aboriginal and Quality Committee (PAQ) is a standing committee of the Board of Directors. The roles related to managing the risk of infections for PAQ (outlined in the Terms of Reference) are:

- to have systems in place to collect, interpret and transform data to create usable, credible information and reporting tools for various audiences;
- to ensure that a system of continuous quality improvement methodology is being used; and

- to:
  - — review and advise the board with respect to risk management issues (e.g., major incident/negligence summaries and issues involving litigation) and ensure follow-up actions are undertaken through Quality Assurance reviews;
  - — ensure there is a process for region-wide, coordinated disaster planning; and
  - — ensure that a system for developing and maintaining competency for all professional and medical staff is in place.

We expected to see reporting of infection and communicable diseases to PAQ. This would enable discussion, and the recognition of the need for follow-up and the opportunities for improvement.

The committee receives reports on immunization rates for two-year-old children, and flu immunization rates for residents of residential care facilities. These are indicators included in the health authority's Performance Agreement with the Ministry of Health.

The reports come to the attention of the PAQ and the board quarterly.

When Northern Health was not meeting the benchmark set by the province for immunization rates for two-year-olds, an internal review was done, a strategy put in place, and the rate improved. The results were shared provincially.

Residential care facilities report on influenza vaccine uptake of their residents in each HSDA. In March 2006, Northern Health did meet the benchmark in the Performance Agreement. In 2005, it added indicators for the residential care staff and acute care staff to the influenza immunization surveillance rate when it reviewed its own balanced scorecard, and determined what PAQ and the board needed to know to govern the authority. Benchmarking is being done with British Columbia and with the Fraser Health Authority. The Performance Agreement scorecard with the new indicators was reviewed by the PAQ and the members recommended approval by the Board of Directors.

## Reporting on the prevention, surveillance and control of infections across the health authority is very weak

Our review of minutes of the committee found that recent communicable disease reports have gone to PAQ. However, there is no indication that the committee received surveillance reports on nosocomial infections, surgical site infections, or AROs.

Other high-level reports coming to PAQ include provincial updates such as those for SARS, and the status of West Nile virus in British Columbia.

### Minimal infection prevention, surveillance and control information goes to the senior executive team

An agenda item that came to a monthly senior executive team committee meeting is the need to develop a regular reporting process to the board (with fewer than 20 measures to be taken to the board quarterly). A challenge recorded in the minutes is that timely submission of statistical information from staff remains a problem throughout the region.

Reporting of communicable diseases and the status of two-year-old child immunization rates did not appear in the minutes of the senior executive team, nor did Northern Health surveillance reporting of nosocomial infections or AROs.

The items for infection control that come to the attention of the team are high level, require structure and process, and do not include surveillance of infections in the health authority. Some information goes to the senior executive team, but there are no formal reports on incidents of infections across the authority. Agenda items on minutes have included such matters as the following:

- Emergency response to outbreaks relating to public health emergencies was discussed and the management of local outbreaks requiring multi-sector involvement during the SARS outbreak in British Columbia and Canada was reviewed. As a result of the review, the Outbreak Management Team for Northern Health was created.
- Influenza pandemic planning was discussed and the first pandemic influenza planning meeting, chaired by the Chief Medical Health Officer, was to take place in August 2005.

## Reporting on the prevention, surveillance and control of infections across the health authority is very weak

We think that many infection control reports that are generated in the authority would be of interest to senior management and should be shared throughout the region to improve its practices.

- The Performance Agreement scorecard indicators for immunization rates that are gathered should be reported regularly and shared across the authority for staff to take steps when needed to improve the rates.
- Where Infection Control Practitioners are present in Acute Care, AROs are monitored. An e-mail indicated that when infection control structures are put in place, all HSDAs will report quarterly at the HSDA Infection Control Committee and up to the Regional Infection Control Committee. Because the Regional Infection Control Committee advises senior management, it seems appropriate to us that these reports go to the senior executive team for sharing throughout the region.
- When any Infection Control Practitioner does a report based on a concern or issue, it seems appropriate that it go to the attention of senior management, and the HSDA. We saw two such reports, but to whom they went for review was not clear. Practice changes were noted for the site, but we did not see these shared throughout the region.
- Public Health's communicable disease reports go to the Infection Control Committee, but should also be seen by senior management.
- External housekeeping audits are done and they are reviewed at the Joint Review Committee. When there was a low score on a site, practice was investigated, and changes were made to improve the score. Improvements occurred on the site, but the lessons of the improvements were not seen to be shared throughout Northern Health.
- The "Safer Healthcare Now!" initiative has indicators and reports related to infection rates. These reports would be appropriate for senior management. Included will be surgical site infections and perhaps ventilator-associated pneumonias (should the authority be involved in the ventilator initiative).

## Reporting on the prevention, surveillance and control of infections across the health authority is very weak

### The Health Authority Medical Advisory Committee does not regularly receive reports on the infection control program, but it does receive a monthly report from the Medical Health Officer

The Northern Health Authority Medical Advisory Committee (NHA MAC) is accountable to the Board of the Northern Heath Authority and to the Chief Executive Officer through the Vice-President, Medicine for committee process. One of its standing committees is the NHA Infection Control.

In 2003, one of the HSDA Medical Advisory Committees expressed concerns about the lack of a Medical Infection Control Officer and the need to hire one. The job description was rewritten for a physician and the salary adjusted. Minutes of that meeting also said that the minutes of the Regional Infection Control Committee should go to the NHA MAC (though we noted they never did). The Regional Infection Control Committee was also requested to send its terms of reference to NHA MAC.

Caesarean section infection rates went to the committee with an action to take the information and delve deeper for the needed detail to help make decisions about physician practice. It was acknowledged that the needed data for decision-making and the needed information were not readily available.

A regular monthly report from the Chief Medical Health Officer on the provincial status of West Nile virus, SARS and tuberculosis occurred along with one on communicable disease rates for Northern Health (including HIV and tuberculosis). The Medical Health Officer in each HSDA, or the Chief Medical Health Officer, also reports regularly at each of the HSDA MAC.

In the 2004 minutes, we saw that the Regional Infection Control Committee is developing a template for responding to outbreak emergencies using the incident command system.

No surveillance reports from the HSDAs or the Regional Infection Control Committee are seen in the minutes. Neither did we see any nosocomial infection reports, or reports of surgical site infections in our fieldwork, either in any HSDA or at the NHA MAC.

## Reporting on the prevention, surveillance and control of infections across the health authority is very weak

### Northern Health's external reporting on its infection control program is limited

The Health Act, and its regulations require that communicable diseases be reported to Public Health and subsequently to the B.C. Centre for Disease Control, which receives the reports on behalf of the Provincial Health Officer (the centre then reports these diseases to the Public Health Agency of Canada). As well, the health authority must, as part of its Performance Agreement with the Ministry of Health, report on three measures related to immunizations: the rate of up-to-date immunizations for two-year-olds; the rate of influenza immunization for residents of care facilities; and the influenza immunization rates for healthcare workers.

We found that Northern Health meets all of these reporting requirements. However, there is no reporting on nosocomial infection rates or the infection control program.

# Response

# Response

February 21, 2007

Mr. Arn van Iersel
Auditor General (Acting)
Office Auditor General BC
8 Bastion Square
Victoria, BC CANADA V8V 1X4

Dear Mr. van Iersel,

***Regarding: Infection Control: Essential for a Healthy British Columbia***

*The Northern Health Authority (NHA) report has been reviewed by Regional Manager Infection Prevention and Control and the Northern Health (NH) Infection Prevention and Control Committee members. The NH Executive Team received the report and a summary of actions to date, planned initiatives and future challenges.*

*The Auditor General's report accurately reflects the Infection Prevention and Control Program practices at the time of the audit. The challenges presented in the report-are consistent with other health authorities but small facilities and geography compounds the issues for NH. Infection Prevention and Control Practitioners are instrumental to focusing infection prevention and control program across the continuum of NH. Surveillance and the move to prevention will not be accomplished in a consistent manner without these positions.*

*The following are changes that have taken place in the Northern Health Infection Prevention and Control program subsequent to the visit by the OAG in September 2005.*

1. Structure *of the Infection Prevention and Control program has been changed to incorporate the matrix administrative structure of Northern Health and includes:*
    - Terms of reference NH committee completed spring 2006
    - Terms of reference HSDA committee completed spring 2006
    - Functional chart developed for executive

*These documents demonstrate the consistency and interrelationships between the Health Service Delivery Areas (HSDA) and the NHA Infection Prevention and Control Committee. The goal is to ensure that reporting flows unencumbered to the NHA Medical Advisory Committee (NHAMAC) and to the Board.*

2. Planning and Service Delivery

*The Regional Manager of Infection Prevention and Control has utilized information mined from NH documents produced prior to the OAG audit and acquired through collaboration with PICNet.*

- *An Infection Prevention and Control Practitioner Council was developed by the regional manager to provide ICPs with a forum to have input into regional program practices, policy development and ensure consistent practices to specific infection prevention control issues. The secondary intent was to provide mentorship for new staff and reduce feelings of isolation in practice. The terms of reference are included in the document.*
- *Infection Prevention and Control manuals are in different stages of implementation.*
  - *The Acute Care manual developed prior to the OAG audit has undergone numerous updates and revisions in 2006.*
  - *The Complex Care manual is complete and was distributed to facilities in March 2006.*
  - *The Home and Community Care manual is in progress and approximately fifty percent complete.*

*NH stakeholder services such as Mental Health and Addictions would find the required infection prevention and control information in Home and Community Manual.*

- *Education in-services have been provided via several avenues such as general and nursing staff orientation, just in time in-services during outbreaks or other emerging issues and videoconferencing in-services for rural facilities.*
- *The Regional Laboratory Quality Resource Technologist positions in microbiology, chemistry and hematology commenced in August 2006. These positions are responsible for standards of practice and best practices for technologists in NH laboratories and supports infection prevention and control data.*

- *The VIRAP (viral respiratory panel test) commenced for timely detection of the most common respiratory viruses including influenza and RSV. This information guides treatment, utilization of inpatient beds /antibiotic use and infection prevention control practices. The VIRAP was piloted in Prince George in winter 2005 and is available in 2006 to NH sites that choose to use it.*
- *NH Infection Prevention and Control collaborating with Plant Services developed a policy and process for construction following an education session on the national CSA standards. The policy has been approved at all levels of the organization including NHA MAC in November 2006 and has resulted in ICPs being involved in renovation projects at PGRH, PRRH, FSJ, DCDH and with Complex Care facility design planning.*

3. Surveillance *in NH continues to present challenges specifically for the sites that do not have Infection prevention and control practitioners but modest progress had occurred in sites where ICP staffing has been stable.*
   - *Education for new ICPs has been provided or arranged through the Regional Manager who assesses that all but one ICP has skills at a novice level.*
   - *Common databases were created in early 2006 by the Regional Manager on a shared NH network drive for methicillin resistant staph. aureus (MRSA), vancomycin resistant entercoccus (VRE), extended spectrum betalactamase (ESBL), clostridium difficle associated diarrhea (CDAD) and limited targeted surgical site infections (SSI). ICPs input the data and analysis is done by Regional Manager*
   - *Surveillance definitions are currently consistent with national nosocomial surveillance (NNIS) definitions. ICPS from NH are collaborating and actively participating with PICNet working groups that are addressing all antibiotic resistant organisms (ARO), CDAD and SSI surveillance standardization for British Columbia.*
   - *Algorithms for the reporting and follow-up of TB have been developed for facilities with and without ICPs and involved collaboration with Public Health and BC TB Control unit. This algorithm will be used as a template for reporting and follow up of all mandatory reportable communicable diseases.*

- *Safer Health Care Now! The Regional Manager lead the VAP bundle implementation for NH specifically PGRH. ICPs participate with SSI teams working in NE and PGRH.*
- *ICP involvement with the Arthroplasty collaborative at PGRH i.e. participates in client education during the prehab phase and hospital stay.*

4. Infection Control Performance Indicator Report *was developed in May 2006 for NH and is populated with data for the sites that ICPs and submitted quarterly to the NHAIPC committee and to NHAMAC.*
    - *Indicators reported to each HSDA IPC committee and their respective MACs as well as the NH IPC committee and the NH MAC.*

*Regardless of geographical, capacity related and other challenges Northern Health has managed to make significant progress towards a comprehensive, standardized Regional Infection Control Program that utilizes evidence based best practices. Northern Health is working diligently towards aligning the Infection Control Program practices to the Provincial Infection Control Network's (PICNet) developing practices.*

Sincerely

David J. M. Butcher, MD
Vice President of Medicine

# Appendices

# Appendix A: List of reportable communicable diseases in British Columbia

| Reportable Communicable Diseases (reportable by all sources) | | List of Communicable Diseases (reportable by laboratories only) |
|---|---|---|
| Acquired Immune Deficiency Syndrome | Leprosy | All specific Bacterial and Viral Stool Pathogens: (i) Bacterial: Campylobacter; Salmonella; Shigella; Yersinia. (ii) Viral |
| Anthrax | Lyme Disease | Amoebiasis |
| Botulism | Measles | Borrelia Burgdorferi Infection |
| Brucellosis | Meningitis all causes: (i) Bacterial: Hemophilus; Pneumococcal; other (ii) Viral | Cerebrospinal Fluid Micro-organisms |
| Cholera | Meningoccocal Disease: All Invasive; Including Primary Meningococcal Pneumonia and Primary Meningococcal | Chlamydial Diseases including Psittacosis |
| Congenital infections: | Conjunctivitis | Cryptococcus neoformans |
| Toxoplasmosis, Rubella, Cytomegalovirus, Herpes Simplex, Varicella-zoster, Hepatitis B Virus, Listeriosis, and any other Congenital Infection | Mumps | Herpes Genitalis |
| Cryptosporidiosis | Neonatal Group B Streptococcus Infection | Human Immunodeficiency Virus |
| Cyclospora Infection | Paralytic Shellfish Poisoning (PSP) | Influenza |
| Diffuse Lamellar Keratitis (DLK) | Pertussis (Whooping Cough) | Legionellosis |
| Diphtheria: cases, carriers | Plague | Leptospirosis |
| Encephalitis: Post-infectious, Subacute Sclerosing Panencephalitis, Vaccine-related, Viral. | Poliomyelitis | Listeriosis |
| Food-borne illness: All Causes | Rabies Reye's Syndrome | Malaria |
| Gastroenteritis epidemic: Bacterial, Parasitic, Viral | Rubella: Congenital Rubella Syndrome | Q fever |
| Genital Chlamydia Infection | Severe Acute Respiratory Syndrome | Rickettsial Diseases |
| Giardiasis | Smallpox | Severe Acute Respiratory Syndrome |
| Haemophilus Influenza Disease, All Invasive by Type | Tetanus | Smallpox |
| Hantavirus Pulmonary Syndrome | Transfusion Transmitted Infection | Tularemia |
| Hemolytic Uremic Syndrome | Tuberculosis | West Nile Virus Infection |
| Hemorrhagic Viral fevers | Tularemia | |
| Hemorrhagic Viral fevers | Typhoid Fever and Paratyphoid Fever | |
| Hepatitis Viral: Hepatitis A; Hepatitis B; Hepatitis C; Hepatitis E; other Viral Hepatitis | Venereal Disease: Chancroid; Gonorrhea – all sites; Syphilis | |
| Human Immunodeficiency Virus | Waterborne Illness: All causes | |
| Invasive Group A Streptococcal Disease | West Nile Virus Infection | |
| Invasive Streptococcus Pneumoniae Infection | Yellow Fever | |

Source: Health Act Communicable Disease Regulation (BC Reg. 281/2004)

# Appendix B: Canadian Standards Association infection control during construction or renovation of health care facilities (April 2003)

The standard describes precautionary and remedial measures for preventing exposure to agents, released or augmented, because of actions undertaken during health care facility construction, renovation, maintenance, and repair work.

Preventive measures are categorized as I, II, III and IV and are put in place for all stages of construction activity—before, during, and after. The prevention measures required are based on the analysis of population risk group and type of construction activity. Table 1 shows a preventive measures analysis and includes the use of information from Tables 2 and 3.

Table 1: Preventive Measures Analysis

| Population Risk Group[1] | Construction activity type[2] | | | |
|---|---|---|---|---|
| | Type A | Type B | Type C | Type D |
| Group 1 | I | II | II | III/IV |
| Group 2 | I | II | III | IV |
| Group 3 | I | III | III/IV | IV |
| Group 4 | I - III* | III/IV | III/IV | IV |

[1] See Table 2 to determine population risk group

[2] See Table 3 to determine construction activity

* When the risk group is Group 4 and construction activity is Type A, the infection prevention and control department shall be consulted to determine the appropriate preventive measure (I, II, or III).

Table 2: Population Risk Groups and Geographical Areas (Examples only)

| Population Risk Group | Typical areas |
|---|---|
| Group 1<br>Lowest Risk | Office areas<br>Public areas<br>Physical plant workshops and housekeeping areas |
| Group 2<br>Medium Risk | Outpatient clinics (except oncology and surgery)<br>Admission and discharge units<br>Physical therapy areas remote from patient care areas |

# Appendix B

| Population Risk Group | Typical areas |
|---|---|
| Group 3<br>Medium to high risk | Emergency (except trauma rooms)<br>Nurseries for healthy newborns<br>Geriatrics<br>Nuclear medicine |
| Group 4<br>Highest risk | Intensive care units<br>Oncology units and outpatient clinics for cancer patients<br>Burn care units<br>Trauma rooms<br>Operating rooms<br>Sterile supply areas |

Table 3: Construction Activity Type (Examples only)

| Construction Activity Type | Description |
|---|---|
| Type A | Inspection and non-invasive activities. These include but are not limited to:<br>a) activities that require removal of no more than one ceiling tile or require wall or ceiling panels to be opened; and<br>b) electrical trim work. |
| Type B | Small scale, short duration activities that create minimal dust. These include, but are not limited to:<br>a) activities that require access to chase spaces; and<br>b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for less than 30 minutes. |
| Type C | Activities that generate a moderate to high level of dust; require demolition; require removal of a fixed building component (e.g., sink) or assembly (e.g., countertop, cupboard); or cannot be completed in a single work shift. These include but are not limited to,<br>a) activities that require sanding of a wall in preparation for painting or wall covering;<br>b) removal of floor coverings, ceiling tiles, and casework;<br>c) electrical work above ceilings. |
| Type D | Activities that generate high levels of dust and major demolition and construction activities requiring consecutive work shifts to complete. These include but are not limited to:<br>a) activities that involve heavy demolition or removal of complete cabling systems; and<br>b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for more than 1 hour. |

# Appendix C: Office of the Auditor General: Performance Auditing Objectives and Methodology

The Office has three lines of business:

- examining the reliability of the provincial public sector's financial reporting;
- assessing how well the public sector manages its key risks; and
- assessing the quality of provincial public sector performance reports.

Each of these lines of business have certain objectives that are expected to be achieved, and each employs a particular methodology to reach those objectives. The following is a brief outline of the objectives and methodology applied by the Office for assessing how well the public sector manages its key risks.

## Performance Auditing

### What are Performance Audits?

Performance audits (also known as value-for-money audits) examine whether money is being spent wisely by government —whether value is received for the money spent. Specifically, they look at the organizational and program elements of government performance, whether government is achieving something that needs doing at a reasonable cost, and consider whether government managers are:

- making the best use of public funds; and
- adequately accounting for the prudent and effective management of the resources entrusted to them.

The aim of these audits is to provide the Legislature with independent assessments about whether government programs are implemented and administered economically, efficiently and effectively, and whether Members of the Legislative Assembly and the public are being provided with fair, reliable accountability information with respect to organizational and program performance.

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In completing these audits, we collect and analyze information about how resources are managed; that is, how they are acquired and how they are used. We also assess whether legislators and the public have been given an adequate explanation of what has been accomplished with the resources provided to government managers.

## Focus of Our Work

A performance audit has been described as:

*...the independent, objective assessment of the fairness of management's representations on organizational and program performance, or the assessment of management performance, against criteria, reported to a governing body or others with similar responsibilities.*

This definition recognizes that there are two forms of reporting used in performance auditing. The first—referred to as attestation reporting—is the provision of audit opinions as to the fairness of management's publicly reported accountability information on matters of economy, efficiency and effectiveness. This approach has been used to a very limited degree in British Columbia because the organizations we audit do not yet provide comprehensive accountability reports on their organizational and program performance.

We believe that government reporting along with independent audit is the best way of meeting accountability responsibilities. Consequently, we have been encouraging the use of this model in the British Columbia public sector, and will apply it where comprehensive accountability information on performance is made available by management.

As the performance audits conducted in British Columbia use the second form of reporting—direct reporting—the description that follows explains that model.

Our "direct reporting" performance audits are not designed to question whether government policies are appropriate and effective (that is achieve their intended outcomes). Rather, as directed by the Auditor General Act, these audits assess whether the programs implemented to achieve government policies are being administered economically and efficiently. They also evaluate whether Members of the Legislative Assembly and the public are being provided

# Appendix C

with appropriate accountability information about government programs.

When undertaking performance audits, we look for information about results to determine whether government organizations and programs actually provide value for money. If they do not, or if we are unable to assess results directly, we then examine management's processes to determine what problems exist or whether the processes are capable of ensuring that value is received for money spent.

## Selecting Audits

All of government, including Crown corporations and other government organizations, are included in the universe we consider when selecting audits. We also may undertake reviews of provincial participation in organizations outside of government if they carry on significant government programs and receive substantial provincial funding.

When selecting the audit subjects we will examine, we base our decision on the significance and interest of an area or topic to our primary clients, the Members of the Legislative Assembly and the public. We consider both the significance and risk in our evaluation. We aim to provide fair, independent assessments of the quality of government administration and to identify opportunities to improve the performance of government. Therefore, we do not focus exclusively on areas of high risk or known problems.

We select for audit either programs or functions administered by a specific ministry or government organization, or cross-government programs or functions that apply to many government entities. A large number of such programs and functions exist throughout government. We examine the larger and more significant of these on a cyclical basis.

Our view is that, in the absence of comprehensive accountability information being made available by government, performance audits using the direct reporting approach should be undertaken on a five- to six- year cycle so that Members of the Legislative Assembly and the public receive assessments of all significant government operations over a reasonable time period. We strive to achieve this schedule, but it is affected by the availability of time and resources.

# Appendix C

## Planning and Conducting Audits

A performance audit comprises four phases—preliminary study, planning, conducting and reporting. The core values of the Office—independence, due care and public trust—are inherent in all aspects of the audit work.

### *Preliminary Study*

Before an audit starts, we undertake a preliminary study to identify issues and gather sufficient information to decide whether an audit is warranted.

At this time, we also determine the audit team. The audit team must be made up of individuals who have the knowledge and competence necessary to carry out the particular audit. In most cases, we use our own professionals, who have training and experience in a variety of fields. As well, we often supplement the knowledge and competence of our staff by engaging one or more consultants to be part of the audit team.

In examining a particular aspect of an organization to audit, auditors can look either at results, to assess whether value for money is actually achieved, or at management's processes, to determine whether those processes should ensure that value is received for money spent. Neither approach alone can answer all the questions of legislators and the public, particularly if problems are found during the audit. We therefore try to combine both approaches wherever we can. However, because acceptable results-oriented information and criteria are often not available, our performance audits frequently concentrate on management's processes for achieving value for money.

If a preliminary study does not lead to an audit, the results of the study may still be reported to the Legislature.

### *Planning*

In the planning phase, the key tasks are to develop audit criteria—"standards of performance"—and an audit plan outlining how the audit team will obtain the information necessary to assess the organization's performance against the criteria. In establishing the criteria, we do not expect theoretical perfection from public sector managers; rather, we reflect what we believe to be the reasonable expectations of legislators and the public.

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*Conducting*

The conducting phase of the audit involves gathering, analyzing and synthesizing information to assess the organization's performance against the audit criteria. We use a variety of techniques to obtain such information, including surveys, and questionnaires, interviews and document reviews.

## Reporting Audits

We discuss the draft report with the organization's representatives and consider their comments before the report is formally issued to the Legislative Assembly. In writing the audit report, we ensure that recommendations are significant, practical and specific, but not so specific as to infringe on management's responsibility for managing. The final report is tabled in the Legislative Assembly and referred to the Public Accounts Committee, where it serves as a basis for the Committee's deliberations.

Reports on performance audits are published throughout the year as they are completed, and tabled in the Legislature at the earliest opportunity. We report our audit findings in two parts: an Auditor General's Comments section and a more detailed report. The overall conclusion constitutes the Auditor General's independent assessment of how well the organization has met performance expectations. The more detailed report provides background information and a description of what we found. When appropriate, we also make recommendations as to how the issues identified may be remedied.

It takes time to implement the recommendations that arise from performance audits. Consequently, when management first responds to an audit report, it is often only able to indicate its intention to resolve the matters raised, rather than to describe exactly what it plans to do.

Without further information, however, legislators and the public would not be aware of the nature, extent, and results of management's remedial actions. Therefore, we publish updates of management's responses to the performance audits. In addition, when it is useful to do so, we will conduct follow-up audits. The results of these are also reported to the Legislature.

# Appendix D: Office of the Auditor General: 2006/07 Reports Issued to Date

Report 1 - April 2006

Strengthening Public Accountability: A Journey on a Road that Never Ends

Report 2 - September 2006

The 2010 Olympic and Paralympic Winter Games: Review of Estimates Related to the Province's Commitments

Report 3 - November 2006

Audit of Treaty Negotiations in British Columbia: An Assessment of the Effectiveness of British Columbia's Management and Administrative Processes

Report 4 - December 2006

Province of British Columbia Audit Committees: Doing the Right Things

Report 5 - December 2006

Audit of Government's Corporate Accounting System: Part 2

Report 6 - December 2006

Monitoring Government's Finance Province of British Columbia

Report 7 - December 2006

Government's Post-secondary Expansion — 25,000 Seats by 2010

Report 8 - December 2006

Changing Course — A New Direction for British Columbia's Coastal Ferry System: A Review of the Transformation of BC Ferries

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Report 9 - January 2007

Seeking Best Practices in Financial Reporting: Report on the Province's 2005/06 Public Accounts

Report 10 - February 2007

Follow-up of 2004/2005 Report 2: In Sickness and in Health: Healthy Workplaces for British Columbia's Health Care Workers

Report 11 - March 2007

Infection Control: Essential for a Healthy British Columbia
The Provincial Overview

This report and others are available on our website at:
http://www.bcauditor.com